

when the duration of cloudiness is alone desired, as is usually the case.

The cloudiness is determined by numerous personal observations at all stations during the daytime, and is given in the column of "average cloudiness" in Table I; its complement, or percentage of clear sky, is given in the last column of Table XI.

COMPARISON OF DURATIONS AND AREAS.

The sunshine registers give the *duration* of direct sunshine whence the percentage of duration of possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. These numbers have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental record of percentages of duration of sunshine is almost always larger than the observers' personal estimate of percentages of area of clear sky; the average excess for November, 1895, is 4 per cent for photographic records, and 6 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshine.

Photographic stations.	Instrumental.	Personal.	Difference.	Thermometric stations.	Instrumental.	Personal.	Difference.
Phoenix, Ariz.....	81	70	11	San Francisco, Cal.....	66	63	3
San Diego, Cal.....	78	70	8	Atlanta, Ga.....	64	58	6
Santa Fe, N. Mex.....	70	65	5	Vicksburg, Miss.....	56	55	1
Dodge City, Kans.....	69	64	5	New Orleans, La.....	57	56	1
Denver, Colo.....	68	58	10	Little Rock, Ark.....	54	43	11
Eureka, Cal.....	63	58	5	Philadelphia, Pa.....	53	43	10
Savannah, Ga.....	52	50	2	Detroit, Mich.....	51	40	11
Salt Lake City, Utah.....	50	34	16	St. Louis, Mo.....	51	35	16
Galveston, Tex.....	48	46	2	Wilmington, N. C.....	50	48	2
Washington, D. C.....	46	52	-6	New York, N. Y.....	49	44	5
Kansas City, Mo.....	45	44	1	Portland, Me.....	48	38	10
Helena, Mont.....	38	34	4	Baltimore, Md.....	45	49	-4
Eastport, Me.....	37	20	17	Columbus, Ohio.....	45	31	14
Portland, Oreg. †.....	31	34	-3	Des Moines, Iowa.....	45	32	13
Cleveland, Ohio.....	28	32	-4	Rochester, N. Y.....	45	36	9
Bismarck, N. Dak.....	19	31	-12	Chicago, Ill.....	41	31	10
				Cincinnati, Ohio.....	41	37	4
				Boston, Mass.....	37	34	3
				Louisville, Ky.....	34	30	4
				Buffalo, N. Y.....	33	26	7
				Portland, Oreg. †.....	29	34	-5
				Marquette, Mich.....			

* No thermometric report.

† Records kept by both methods.

WIND.

The *prevailing winds* for November, 1895, viz, those that were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

The *resultant winds*, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart II, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

The *diurnal variation* in the velocity of the wind is shown in Table VI, which gives the total movement for each hour of seventy-fifth meridian time, as deduced from self-registering anemometers at about 136 stations.

HIGH WINDS.

Maximum wind velocities of 50 miles or more per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		<i>Miles</i>				<i>Miles</i>	
Block Island, R. I.....	13	54	ne.	Hatteras, N. C.....	13	53	n.
Do.....	13	50	ne.	Independence, Cal.....	21	50	n.
Buffalo, N. Y.....	26	68	w.	Kittyhawk, N. C.....	13	54	n.
Chicago, Ill.....	27	53	s.	Do.....	13	59	n.
Cleveland, Ohio.....	26	73	s.	Do.....	13	54	n.
Detroit, Mich.....	26	78	sw.	Lexington, Ky.....	25	62	s.
El Paso, Tex.....	3	50	sw.	Louisville, Ky.....	25	50	sw.
Erie, Pa.....	26	54	sw.	Do.....	25	57	sw.
Fort Canby, Wash.....	13	72	se.	Port Huron, Mich.....	26	55	sw.
Do.....	26	62	se.	Toledo, Ohio.....	26	60	sw.
Do.....	26	78	se.	Woods Holl, Mass.....	1	50	se.
Do.....	26	60	s.	Do.....	21	52	sw.
Hatteras, N. C.....	13	54	n.				

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

The dates on which reports of thunderstorms for the whole area were most numerous, were: 5th, 29; 25th, 22; 26th, 29.

Thunderstorm reports were most numerous in: Florida, 17; Massachusetts, 15; New Jersey, 24.

Thunderstorms were most frequent in: Florida, 8; Arizona and Texas, 6; Arkansas, Georgia and Oregon, 5.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 1st to the 5th, inclusive, and also the 27th to 30th. On the remaining twenty-one days of this month 333 reports were received, or an average of about 16 per day. The dates on which the number of reports especially exceeded this average were: 9th, 142; 10th, 63; 11th, 39; 12th, 21; 23d, 28.

The ratio of the number of reports to the number of observers was largest in: Illinois, 29 per cent; Minnesota, 75; North Dakota, 80; South Dakota, 43; Wisconsin, 67.

Auroras were reported most frequently in: Minnesota, Montana and Wisconsin on nine days; Massachusetts and New York, eight; Illinois, North and South Dakota, seven.

The most important display of the month was that of the 9th, 10th, 11th, and 12th. Many observers remark on this as being one of the brightest auroras on their records.

CANADIAN DATA—THUNDERSTORMS AND AURORAS.

The only thunderstorm reported was on the 9th at Montreal.

The dates of auroras were as follows: Sydney, 11; Grand Manan, 12; Father Point, 13, 24; Quebec, 24; White River, 9; Saugeen, 12; Port Arthur, 9 to 12; Winnipeg, 9; Minnedosa, 10 to 15, 21, 23, 24; Qu'Appelle, 9; Medicine Hat, 11, 22; Swift Current, 23; Prince Albert, 22, 23, 25, 26; Edmonton, 11.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers during the current month are given in Table VII, from which it will be seen that no river attained the danger point and that on the average the waters continued quite low, as in October. At Vicksburg the Mississippi declined steadily until the 14th, when it was 6.3 feet below the low water mark adopted as the zero of the gauge. At Memphis, Helena, Arkansas City, Greenville, and Vicksburg the mean stage of water for the month was from 2.0 to 5.7 feet below the zeros of the respective gauges. During the latter part of the month the Ohio River and its tributaries generally rose a few feet.